

current/proposed

CLASSIFICATION TITLE Mat & Rsch Eng Associate (Spec)	OFFICE/BRANCH/SECTION ORMT/AB&HMA LAB	
WORKING TITLE M&REA, Lead Worker	POSITION NUMBER 559-320-3381-XXX	EFFECTIVE DATE 05/01/2018

As a valued member of the Caltrans team, you make it possible for the Department to provide a safe, sustainable, integrated, and efficient transportation system to enhance California's economy and livability. Caltrans is a performance-driven, transparent, and accountable organization that values its people, resources and partners, and meets new challenges through leadership, innovation and teamwork.

GENERAL STATEMENT:

Under the direction of the Chief of the Asphalt Binder and Hot Mix Asphalt Laboratory, the Materials and Research Engineering Associate (M&REA) serves as a lead worker for the hot mix asphalt testing team, or the asphalt binder and asphaltic emulsion testing team. The M&REA performs laboratory tests on either hot mix asphalt, asphalt binder, or asphaltic emulsion samples; uses, calibrates, and maintains laboratory test equipment; performs testing using national or state standard test methods; employs computers to compile test data; and, prepares test reports or other laboratory documentation. Other assignments include assisting engineers with the development and implementation of state specifications and testing methods to determine material properties for materials used in flexible pavements and asphaltic surface treatments. The work environment for the M&REA is primarily a materials testing laboratory within an indoor climate controlled facility and under artificial lighting. The laboratory's work requires the M&REA to sit or stand for extended periods of time. On occasion, travel and outdoor activities associated with obtaining material samples and/or training are required. Professional conduct is required at all times.

CORE COMPETENCIES:

As a Mat & Rsch Eng Associate (Spec), the incumbent is expected to develop the following competencies as described below in order to successfully perform the essential functions of the job, while adhering to and promoting the Department's Mission, Vision, Values, and Goals.

- **Communication:** Expresses oneself clearly in all forms of communication. Gives feedback and is receptive to feedback received. Knows that listening is essential. Keeps others in the Division and other functional units informed as appropriate. (Safety and Health, Organizational Excellence - Commitment, Teamwork)
- **Customer Focus:** Considers, prioritizes, and takes action on the needs of both internal and external customers. (Stewardship and Efficiency/Organizational Excellence - Teamwork)
- **Ethics and Integrity:** Demonstrated concern to be perceived as responsible, reliable, and trustworthy. Respects the confidentiality of information or concern shared by others. Honest and forthright. Conforms to accepted standards of conduct. (Organizational Excellence - Integrity)
- **Initiative:** Ability to identify what needs to be done and doing it before being asked or required by the situation. Seeks out others involved in a situation to learn their perspectives. (O, Organizational Excellence - Commitment, Teamwork)
- **Reliability:** Ability to demonstrate dependability in meeting commitments, and providing a consistent work product. Takes responsibility for individual actions in order to meet deadline demands. (Organizational Excellence - Commitment, Teamwork)

TYPICAL DUTIES:

Percentage Essential (E)/Marginal (M) ¹	Job Description
55% E	Conducts tests and compiles test results on asphaltic material samples, which include hot mix asphalt, neat asphalt binders, asphalt rubber binders, modified asphalt binders, asphalt modifiers, and asphalt emulsions. Participates in and conducts training for testing procedures, equipment care, use, documentation, and test result reporting. Obtains test method proficiency certification through Caltrans for California Test Methods (CTMs), and through the Asphalt Institute (AI) for some of the American Association of State Highway and Transportation Officials (AASHTO) Test Methods, and for AI Technician Certification. Performs laboratory testing and documentation as directed by the supervisor. Performs proficiency sample testing for laboratory certification/accreditation. Enters and retrieves testing data to and from a computerized database. Assists with correlation studies of materials and/or testing equipment. Following national or state standard testing procedures, conducts testing of hot mix asphalt or asphalt binders, including Superpave testing. Performs data analysis under guidance of an engineer. Prepares draft reports on material data analysis. Installs, tests, operates and maintains laboratory instrumentation and devices, including their regular maintenance and calibration as required for laboratory certification and/or accreditation. Records and files laboratory equipment data into a computer database.

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20%	E	As the lead worker, assigns, schedules, and reviews the work of laboratory technicians in the Asphalt Binder and Hot Mix Asphalt Laboratory. In addition, provides basic on-the-job training to the technicians that covers their assigned testing duties, provides input to the supervisor on the performance of team members, and provides input to the supervisor to resolve conflicts that arise as a result of workflow issues, equipment performance issues, and/or testing procedure issues. Performs laboratory safety functions and inspections as directed by the supervisor.
10%	E	Assists the supervisor or engineers in problem-focused studies and investigative work to establish or revise specifications, test methods, and techniques that address materials engineering problems. Maintains testing equipment by cleaning, troubleshooting, and performing minor repairs. Calibrates testing equipment per established schedule, or as necessary. Advises the supervisor if maintenance or calibration efforts require extraordinary effort. Documents the maintenance and calibration activities for each piece of equipment. Assists with the development, documentation, and implementation of new or modified test methods for asphaltic materials that are used in flexible pavements and their surface treatments.
5%	E	Provides telephone and person-to-person assistance regarding asphalt binder or hot mix asphalt testing. Assists in logging of samples received by the lab, and assists in reporting of results to Construction and/or other requestors. Assists with communications informing engineers and technicians regarding received samples, test procedures, and test results. Checks co-workers' reports for accuracy and standardization for internal laboratory quality control. Compiles raw data taken from the asphalt testing equipment, inputs the data into various software applications (e.g., MS-Word or MS-Excel), and then updates electronic test data files and/or reports.
5%	M	Offers advice to technicians and/or engineers concerning asphalt binder or hot mix asphalt sampling and testing procedures that may affect test results.
5%	M	Performs assignments or other duties as directed by the supervisor. Performs general laboratory housekeeping, and assists with equipment and supplies purchasing. Occasionally checks database records for data requests or special reports. Assists with laboratory storage area activities and inventory functions.

ESSENTIAL FUNCTIONS are the core duties of the position that cannot be reassigned.

MARGINAL FUNCTIONS are the minor tasks of the position that can be assigned to others.

SUPERVISION OR GUIDANCE EXERCISED OVER OTHERS

The M&REA has no supervisory responsibilities, but in backup capacity to the Senior Transportation Engineer, the M&REA acts as a lead worker over technicians, student assistants, and others as required, and assigns and/or schedules laboratory work for laboratory personnel.

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KNOWLEDGE, ABILITIES, AND ANALYTICAL REQUIREMENTS

The M&REA must have a good working knowledge of, and have experience in, the sampling and testing of asphalt binders and hot mix asphalt.

The M&REA must have a good working knowledge of math and computer software applications.

The M&REA must have a general knowledge of highway construction techniques and the materials associated with highway construction and maintenance.

The M&REA must have a general knowledge of laboratory testing equipment maintenance, care, and operations, and safe laboratory practices.

The M&REA must have the ability to work effectively with a multi-disciplinary technical staff, and must have the ability to communicate effectively, both orally and in writing, in the English language using tools such as e-mail, a telephone, or in-person conversations.

The M&REA must have the ability to learn and practice safe testing procedures involving the handling of hot and hazardous substances.

The M&REA must have the ability to complete training assignments, and subsequently train others.

The M&REA must have the ability to learn and understand equipment maintenance or calibration procedures, test methods, or engineering instructions for laboratory testing, and must be capable of following, in strict accordance with, those detailed procedures, methods, or instructions.

The M&REA must have the ability to perform tests repeatedly with precision and accuracy, and must be capable of completing a quantity of tests in a time wise efficient fashion on a daily basis, and have the ability to perform (after the proper training) the numerous materials tests the laboratory conducts.

The M&REA must have the ability and analytical skills to become certified in test procedures.

The M&REA must have the ability to follow the appropriate Caltrans safety requirements and comply with the requirements of the Caltrans Safety Manual and/or the Caltrans Laboratory Safety Manual, and must be capable of adhering to safe testing procedures.

The M&REA must have ability to handle and work with hot asphaltic materials, and be capable of using asphalt cleaning substances and equipment, as well as various laboratory instruments, glassware, and/or tools.

The M&REA must have the ability to work with equipment that is highly technical in nature, have the ability to perform minor testing equipment repairs and maintenance, and be capable of cleaning the testing equipment, tools, and glassware.

The M&REA must have the ability to use computer applications to collect and report test data (e.g., MS-Outlook for e-mail, and the Microsoft Office Suite of MS-Word, MS-Excel, MS-PowerPoint, and MS-Access).

The M&REA must have the analytical skills to: (1) analyze test data and draw valid conclusions, (2) coordinate laboratory activities making efficient use of the available work force, (3) understand the limitations of current test procedures in the evaluation of products related to asphalt binders or hot mix asphalt, (4) assist in the proposal and development of new equipment and test procedures, (5) draft correspondence and reports on materials, equipment, or procedures for both problem-focused and routine testing, (6) serve in a lead worker capacity to complete assigned work, and (7) provide basic on-the-job training to technicians and testers for assigned duties and testing.

The M&REA must analyze other in-process testing functions within the laboratory, and be cognizant of the other test procedures and safety issues.

The M&REA must analyze safety issues and must be responsible for himself/herself, co-workers, and the laboratory equipment.

The M&REA must analyze his/her surroundings at all times, analyze the laboratory conditions and testing procedures, and take the appropriate action(s) as necessary to complete the work as efficiently and safely as possible.

The M&REA must analyze the test data upon data acquisition, determine the validity and accuracy of the data, and ascertain whether to proceed with testing and/or to repeat a previous test before reporting the results of the test.

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RESPONSIBILITY FOR DECISIONS AND CONSEQUENCES OF ERROR

As a materials tester, the M&REA is responsible for the accuracy of test results produced. Inaccuracies could result in increased maintenance costs and/or costly early pavement rehabilitation. Incorrect results could also result in costly delays of Caltrans construction projects and/or claims or lawsuits against the State.

The M&REA is responsible for his/her personal safety as outlined in the Caltrans Safety Manual, the Caltrans Laboratory Safety Manual, the safe practices and standards of the tests being conducted, and the equipment involved with the testing functions. Failure to act in accordance with these standards and practices could result in personal injury, injury to others, and/or to the damage or destruction of state property.

PUBLIC AND INTERNAL CONTACTS

The M&REA will have frequent internal communications with Caltrans Construction, Maintenance, and Materials Engineering staff when transmitting test results, and when responding to inquiries regarding test results and test procedures, and construction projects. The M&REA will have occasional public contact with representatives of industry, as well as local, state, and federal agency personnel, when conducting field work, discussing test methods, laboratory equipment issues, purchasing needs, proficiency sample test procedures or results, asphaltic materials supplier certification issues, construction project material samples, and issues with research efforts. The M&REA will have the primary contact role for California Test Methods regarding asphaltic materials testing. The M&REA will have occasional contact with out of state or in state agencies, manufacturer representatives, and/or university personnel during research efforts, correlation work, and/or calibration work. Professional conduct will be required at all times.

PHYSICAL, MENTAL, AND EMOTIONAL REQUIREMENTS

The M&REA will be required to sit or stand for long periods of time and perform functions such as: (1) using various testing equipment, (2) reading and recording test results, and (3) reviewing and calculating test data. The M&REA will be required to sustain the mental activity needed for conducting tests and calculating results. Problem solving, data analysis, and reasoning may be required to respond appropriately to situations, and to develop and maintain cooperative working relationships.

The M&REA is required to sit and work with a computer for extended periods of time using a keyboard, mouse, monitor, and printer to generate testing data files while in the office. The M&REA is also required to use multipurpose office equipment (e.g., scan/copy/fax/e-mail/print machines) and a telephone. Simple grasping and manually dexterity is required to manipulate small objects. The M&REA is required to repetitively use his/her hands for keyboard usage, mouse usage, or small tool grasping and usage. The M&REA is required to repetitively use hand controls and/or foot controls, and be capable of twisting his/her neck and body while driving state vehicles. The M&REA is required to use hand/eye coordination with manual dexterity to operate testing equipment controls, or to quickly type information on a computer keyboard and view a computer monitor while operating the testing unit. Sitting, walking, kneeling, crouching, climbing in and out of vehicles, bending, twisting, and standing for extended periods of time are required to perform the various testing functions. When the M&REA encounters uneven terrain while working in the field, he/she is required to maintain physical agility while working in the proximity of motorized equipment. The M&REA is required to lift and carry tools, supplies, or materials up to 35 pounds, and is occasionally required to lift and carry tools, supplies, bench top testing equipment, or testing materials up to 50 pounds.

The M&REA will be required to sustain the mental activity needed while testing for extended periods of time, working in the field, writing data files, checking data, problem solving, data analysis, and reasoning. The M&REA will be required to maintain mental awareness while working in the proximity of the hot asphaltic materials and test equipment during testing. The M&REA will be required to perceive the needs and problems of setting up lab equipment and make appropriate decisions with respect to the applicable maintenance or calibration procedure, test method, or engineering instructions.

The M&REA will be required to develop and maintain cooperative working relationships with co-workers, his/her work laboratory supervisor, and others. The M&REA will be required to meet and deal tactfully with other Caltrans staff and/or others, as needed, in the performance of his/her job functions. The M&REA will be required to respond appropriately to difficult situations and take the appropriate actions when necessary. The M&REA will be required to travel statewide up to 10% of the time, as a driver, operator, or passenger in state vehicles, or as a passenger on a commercial airline. The M&REA will be required to use professional conduct at all times.

As a statewide organization, DES adjusts to periods of fluctuating workload to successfully deliver projects. DES employees may be given temporary assignments on DES projects throughout the State as workload demands.

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WORK ENVIRONMENT

For the majority of each day, the M&REA will work in a testing laboratory and may be exposed to dirty surfaces and equipment, odors, hot liquids, open flames (Bunsen burners), and hot equipment. For some part of each day, the M&REA will work in an office cubicle. Both environments are under artificial lighting, and are climate controlled. The M&REA will be required to sit and work with a computer for extended periods, or stand and work with materials and laboratory equipment for extended periods. The M&REA will be assigned time-dated tasks within his/her overall work assignments, and have his/her work reviewed for quality by the supervisor of the laboratory or another M&REA and/or engineer.

The M&REA may occasionally be required to travel and work outdoors performing field work, and may be exposed to dirt, noise, uneven surfaces, and/or extreme heat or cold. For field work, the M&REA will be required to travel using state vehicles and work in a natural outdoor environment. When in the field, the M&REA may be exposed to highway traffic, construction activities, and/or plant operations. The M&REA will be required to wear personal protective equipment while in the field and use professional conduct at all times.

I have read, understand and can perform the duties listed above. (If you believe you may require reasonable accommodation, please discuss this with your hiring supervisor. If you are unsure whether you require reasonable accommodation, inform the hiring supervisor who will discuss your concerns with the Reasonable Accommodation Coordinator.)

EMPLOYEE (Print)

EMPLOYEE (Signature)

DATE

I have discussed the duties with, and provided a copy of this duty statement to the employee named above.

SUPERVISOR (Print)

Albert Vasquez

SUPERVISOR (Signature)

DATE